

10/20 ff/SD.

Strains used from Wis. Public Health Lab.
For details, see protocol book.

Strain	Courtesy SR	$X^+ S^R$ (uncarc.)	$X^+ S^R$ washed conc.
1 93970			
2 ♀ —	dark antagonism K-12 (?)	0	0
3 —		0	0
4 —		0	0
5 93940		0	0
6 9402Y	SR	—	—
7 93941		0	0
8 94043	strong inhibition of K-12.	0	0

10/20/ff

W1362. 22 $\beta X^+ SR$. All lac+ on EM5. Some of these appear Mal-. Reisolate 1362a+b (single colonies) and repeat cross.

10/25/ff #9-30 (excl. 18, 19 as SR). Very concentrated mould to DSM from x1177.

9	0	
10	0	
11	00	
12	—	
13 ca 100	= W1373	Picks to EM5 Lac. 7+: 24-! Recombination
14 0		S- 0
15 1	sucre	
16 0		
17 00		
18 —		
19 —		
20 0		
21 0		
22 0 0		
23 anything colnud. wh??		
24 0		
25 0		
26 20	= W1374	Picks to EM5 Lac, 14 Mal
27 0		
28 0		
29 0		
30 1		Plagues in streak!

"X" 3 → not K-12 but W1113!
Test on Lac+

23 was inadvertently thrown out. Attempt to recover lac+S³ from cross plate.

M/4

W1369 0 / 2 plates mainly no.
W1370 1 / 2 plates → Malt+. If parents off

Test 20 photogels from rosophate to DS4.
various sugars. Data Reorganized 7/6.

13_X :	bac	Mtl	Xyl	Mal
1	-	-	-	-
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-
16	-	-	-	-
17	-	-	-	-
18	-	-	-	-
19	-	-	-	-
20	-	-	-	-

Patterson very
similar to K1

Many unselected recombinations, undoubtedly

30 tested: all apparently
 $\lambda^- \lambda^R$. Rare tiny plaques
may be cart. Residate from
most suspicious.

26x duty to EMS: bar, Hal.

17 rated: all ~~to~~ Hal-

~~Hal-~~ $\frac{6 \text{ tested.}}{16 \text{ lac} - 16 \text{ lac.}} \left\{ \begin{array}{l} 16 \text{ lac} - \lambda^R \\ 16 \text{ lac} - \lambda^+ \end{array} \right.$

$15x$ } See protocol } differs from 15 as T2, 4, 7 sens.
 $30x$ } protocol } " " 30 as λ^s

26 x 10 completely tested:
 $\text{lac} > 1113$

W1373-74 crosses:

W1373 x W1177
(= #13) 20 protographs tested:

<u>Count</u>	<u>bac</u>	<u>Mal</u>	<u>Mfe</u>	<u>Xyl</u>	λ
10	-	-	-	-	R
4	-	+	+	+	R
6	+	-	-	-	R
parents { W1373 W1177 } 2	+	+	+	+	R
	-	-	-	-	+

W1374 x W1177 12 tested

					λ	T4,6,7	T5	W1113
1	+	-			R	S	S	S
7	-	-			+	S	S	S
1	-	-			+	S	R	S
3	-	-			R	S	S	S
W1177	-	-	-	-	+	S	R	S
W1373	+	+	+	+	R	R	R	R

W1375 x #15 1 protograph T2, T4, T7 sens.

W1376 x #30. 1 " λ^S .

Confirm possible recombinants:

- Check prototrophy of #'s. 1, 8, 11, 12
- Compare parent and offspring with respect to:

2	39	Xyl	sl. different
4	36	T ₄ - T ₆	almost identical
13-16	43	T ₆	diff. or T ₄
19	50		identical

#39 (W-1400) and #43 (W-1401) especially probably are recombining with W-1177. ~~W-776-36~~ and W-136 (776-50) very probably are not. W1576 (#30) gave anomalous result.
34, 42, and 46 need to be reexamined.

Backcrosses to K-12 (x⁺ x S^R)

774

October 23, 1950.

A. 58-161 x W1177

11 Yell. 80% +
11 S. 50% -

B K-12 x W1177

C W1302 x W677 → pure lac-mEMB test!
no gal.

W1302 → lac-!
not as recorded!

Grow cultures 24 h. in YT tubes. 0.5 ml each parent / 10 ml. YT
addnl. 30 h. Wash and plate on EMS lac S^R or EMS lac SM + BY
or TLB.

Preliminary (cont'd of 776)

B (m EMS lac SM).

+ -
179 52
178 70

[same - probably misread 5.]

-" + BY

56 40

[many minute colonies not scored].

10/27-28.

B missing!

Plates marked 774A on BM-EMS-lac-SM:

+ -
23 70
16 122
27 108.

Numerous small colonies
not scored. Probably -.

must be repeated!

K-12 Outcross: W-1325 x W-1113

October 22, 1950.

W-1325 x W-1155 on D(0).

- a. Grown together: no yield
- b. Grown separately. Ca. 10^8 /pl each.

10/27 b. 1-2/plate. Mostly small colonies. Pick and restreak on D(0). Pick and restreak on EMB Lac. Separate Lac- and +:

Lac- : 1-4, 6-10, 15.

Lac+ : 11-14; 16-18; 5. [10- : 8 +]

Tests for Mal, Suc, colicin.

Lac- : all Suc-; Mal- except #3 Mal+;

Lac+ : all Suc+ (varying); Mal+

All Lac- appear to be inhibited by K-12.

10/31 Recheck colicin and lysogenicity by cross-streak

Against:

Brush

K-12	W-518	W-1113	lambda
inh. all			
-1	inh.		
-2	inh.		
-3	inh.		
1177	—		
1113x			
K-12 al.	inh.		

inh = inhibited
inh. bits
L = lyses
Ld = lysed.

"K-12" & W-518 & W-1113	—
-1, 2, 3	lysed inh.
W-1113	→ inhibition
K-12 no act.	lysed inh.

"K-12" suspension must be mislabeled. Repeat tests from slants.
 ✓ "K12" — Sucrose+. Confusion due to erroneous substitution of W-1113 (?) for K12. Ignored above. Agreed with verified stocks.

W1113 crosses

11/2/50.

Test #1 and #2 = A, B. by backcross.

A = lac^s Col^s Lac⁺

B = lac^r Col^R

New crosses

{ 773-A W1325 x W55 B W1155 x W677 }

C { 773-A x W1177 } Very high yield
 D { 773-A x W1117 } Yield poor of A & Lac -

A W1325 x W1155. Many tiny colonies. Lac+ most prominent.
 B. W677 x W1155 High yield, Lac+ and -. Purify.

11/9: B: 20+ and 20- prototrophs purified and picked to sucrose.

Lac+ : 20^{s+} G. Mal, Colicin varieties.

Lac- : 20^{s-}

check: mixture of lac+s+ lac-s- e.g.

Test further on EMBO Mal, Ygl: all lac+ are suc+s+ Ygl+ Mal+
 Thus, shows no sign of recombination. lac- are suc-s- Ygl- Mal-

Test on saccharose: T1, T2, T4, T5, T6, T7, T8:

Lac+

Lac-

A. Ca 100 addnl. lac+ tested: all suc+s+. No lac- found

Test on Mal, T8, T7.

774'

11/2/50.

= 1875+

A	58-16)	x	1177
B	W K-12	x	1177
C	W 1367	x	Y10
D	W 1367	x	X12
E	W 1368	x	W 84
	B15R		W 677

TLB, Inc

Inocula: 1 ml each parent

11/4. A. EMS Lac SM: 2+ : 3 -

SM + B17: 7+ : 21 - many small unscoreable
 20+ : 44 - " " at this time
 1H: 43 - ...

B. SM 1+ : 3 -

C. SM ca = on a smudged plate
 42+ : 35 -

SM + TLB,
 64+ : 135 - many small
 { Pick small - to EMB lac- for
 isolation of TLLac- }

D. (SM) ~~12+ : 0~~
 13+ : 12 -

E Lac SM
 Lac SM + B17 (was !!) tubif! 3+ : 1 - (2 plates)

See 784

Shake out 776-23 cross.

776-23

11/7.../50

Strips out background of original 77B-23 Eosoplate
Picks single colonies and test on various sugars.

Lac⁻ S
selection

			L	M	X
bac	Mal	xgl			
- + + + + - - - +	- + + + + - +		L	M	X
L M X			L M X		
all+	allx	all+	all+	all+	all+

presumably
parents.

Tests on putative secongenials

7769.

11/10/50.

Praefid.

716.32
middle part
of 19 mm x
5 mm x
5 mm

EMB	16	43
negr	#	47
negr	-	47
	17	48
	18	48
	19	50

Pellets for

EMB Half

Test on Xgl, M+L, >, T4567

far → w1376, 39, 36, 32, 33, 43, 48, 50; 13629; b.

W1376

39

36

32

三

43

48

५८

1362a

other
data

30
48 1177

all T

R R R R R R R R
R R R R R R R R
R R R R R R R R
R R R R R R R R
R R R R R R R R

R R R R
S R S S

776:32
= Wg 39

$39\#$ is a strong $Xyl+$; 39_x is weaker, and may therefore occ. -

$36\#$ is stronger + than $36x$, but not markedly.

Revert back for 39_x

#19 indistinguishable from 776-50.

	T4	T6
# 13	S ^P	S
14	S ^P	S ^P
(15)	R	R ^P
16	S	S
776-43	R	S ^P

{ clearly different from parent in
T4 reactions. Recombination
very likely.

New colic crosses

11/9/50. Stickout colonies from toes - yielding ~~poor~~ crosses.

Results : high yields :

34 Lact + Mal - ? →
42 All Lact + Malt +
46

Repeat classes

High yield: 23, 34, 42, 46

low yield: 32, 33, 39, 43, & 1376.

{ give w-numbers.

11/12/50

"W1377", at first regarded as S^3 , shows anomalous responses:

Crosses streak with SM 20,000 u.

On EMB Lac: W1377 and other isolates react as S^3 ^{at 15} to 1/20,000 but S^+ to 1/100,000
EM5 Lac

On D(0) W1377 is S^3 grows poorly on D(0).
other isolates also grow poorly.

∴ W1377 is not suitable for crosses owing to partial resistance.

However, it seems very likely to be crossable with K-12. Spreading of colonies on DSG is due to growth of prototroph mutants (rather mutants which grow on D(0) as well as on EM5 Lac). Initial appearance of 776-23 plate suggests that W1377 is similar to original stock.

Restreak original plate on EM5 Lac and examine for S^3 prototrophs

Test W1377 on EM5 Lac: SM (100 - 1000 u/ml).

On 1000 u / W1377 gives only scattered colonies; on 100 u (EM5) ^{turbid growth}.

→ In 40 tests, one reacted S^3 to 20,000 u/ml loopful streaked on EM5 Lac.
Hold as W1377A. Recheck & compare with W1377.

11/12/50.

Summary of Outcross Experiments.

Doubtful Crosses. xW1177

763. W1113. (Known to cross with K-12, using biochemical reagents).

A. Noyzill, dilute culture on DSM.

B. " " conc.

C. "

11/17/50.	51	B/6	Suc. + Cellob. + ^{antag 578} w/soil. ^{at 10³} S	Prototrophy.	Control	X+
	52X	++m	+-	+	0 0	-
	53	±SM	- +	+	+ 0	-
	54	+	+ m -	+	0	-
	55X	++	--	+	0 0	-
	56	-	- +?	+	1+m 0	-
	57	++m	+ m -	+	-	-
	58X	nosm	+ m -	+	T T	-
	59	- P?	--	+	T	-
	60	- P?	--	+	+	-
	61	± S' -	- ++	+	± S' 0	-
	62	± S' -	- +	+	± S' 1+	-
	63	± S' -	- -	+	± S' 0 T	-
	64	± SM -	- -	+	± S' T, 00 +	-
	65	±	± Lac M?	+	+SM 100 +	-
			- S	++(spr.)	Turbid, +,-	-
					HESM: --	-

58 maybe 4. Shootout lysine on W578. → only antag.

Shootout # 59, 60 on E 1432 seen.

58 maybe suitable Sucr + Cellobriose + Save.

No promising cultures

Check 6.5 on Mal; test crossability.

Also Save

53, 56, 61, 62
as colicidal.

66 W1442
67 1443
68 1444
69 1445

SUMMARY (also see 791 fr.)

W1377. S^P : results of DSM crosses confused, but fern. recombinants found.

1378 Fern. Rec. ✓ $x^+ S^R$ all λ^k
1374 " " ✓ " Many λ^R ; λ^+

1395 { Mostly Lac+Mal+. High yields
1396
1397 Lact, -.

1115 DSM; low yield. Nutr. Very low yield (colicin), but rare fern. rec.
were formed. Both parental combinations seen. See 763.

Confirm W1395-6-7
and W1377 X

776

W1377. Partially resistant to streptomycin. Picks 8 colonies $\frac{?}{r+}$
 $\frac{r-}{\text{EMS Melson}}$

W1395. c. $\frac{0 \text{ colonies}}{\times > 300 \text{ / plate}}$. All apparently Lac⁺ T7^R ... (parental)
Lac⁺.

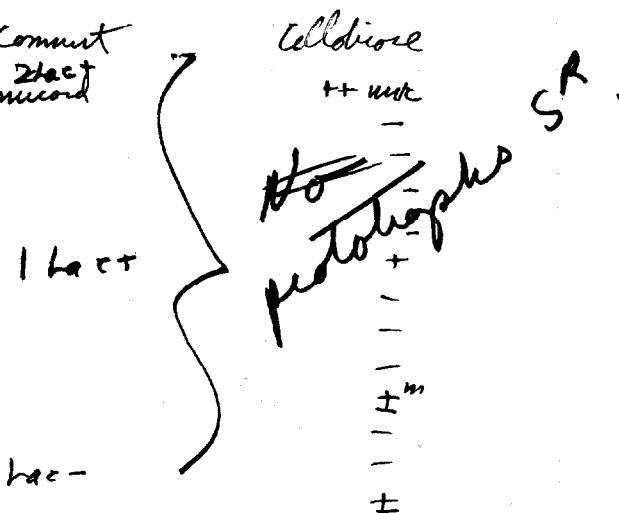
W1396 c. $\frac{0}{\times > 300 \text{ / plate}}$ All + on EMS Melson; Lac sm.

W1397 c $\frac{0}{\times > 500 \text{ / plate}}$. All $\frac{\text{EMS Melson}}{\text{Lac}^+, \text{ and } -}$ + ?

W1377A $\frac{0}{\times}$ Ca. 6-10/plate Lac+. Transf to EMS Melson

From Host
Minicellus

	Sucrose	colicin on Commt	W578
70	+	-	2 lac ⁺ mucoid
71	-	+	
72	-	-	
73	-	±	
74	+	-	
75	+	-	
76	-	-	
77	++	-	
78	-	-	
79	++	-	
80	+	-	
81	-	±	
82	-	+	
83			
84			
85			
86			
87			
88			
89			
90			
91			
92			
93			
94			
95			
96			
97			
98			
99			
100			
101			
102			
103			
104			
105			
106			



Colicin
++ muc

SR.

~~No prototrophs~~

70-82
All Malt+ S⁺ X⁺

65	-
66	-
67	++
68	-
69	-

O, 2 Malt⁺
O, O
1, 1, 0, 0 (Malt+)
O, O, O

	lysogenic	lac-	lac+
ER. carotovora	83	0	
ER. amylozae	84	0	
W1281	85	0	
all prototrophs	86	0	
	87	0	
	88	0	
	89	0	
	89	0	
	90	0	
	91	0	
	92	0	
(93)	-	0	
(94)	+	0	
(95)	+	0	
(96)	+	0	
(97)	++ col.	1 Malt-	±

mucoid SR do not use.

Ca 20 Malt+ ; * mucoid + non-mucoid.

- 90: parents: non-mucoid lac+ Malt+ ; Mucoid + non-mucoid **.
 93: lac+ ; Malt+ (plaque?)
 95: Malt+ ; Malt-
 103: parents Malt+ and - ; lac+ in "Malt-" lac+
 106: parent: Malt-+ ; Malt-

XW1177

		FREEDERIC	
m	96	CA7	0
EM) Mal	97	CA18	0
sm.	98	CA23	0
	99	CA31	dense spotting of Mal+ (^{100?})
	100	CA38	0
	101	CA42	0
	102	CA46	0
	103	CA53	ca. 20 Mal -
	104	CA57	- 0
	105	CA58	0
	106	CA62	- 2 Mal -
	107	KL35	0
	108	C6	0
	109	W.PHLab	¹⁰⁹⁰⁶⁶ 0 0
	110	"	¹⁰⁹⁰⁶⁷ 0, 3+,
	111	" 109067	0, 0,
	112	"	Turbid! SR.

	Sac	Celb.
	-	-
	-	-
	-	-
	++	-
	±	-
	-	-
	±	-
	±	-
	-	-
	-	-
	-	-
	-	-

12/14/50. Repeat: EMStac.

90	0	
93	0	1+, -, several +?
95		
103 N-	A few + ?	0
106 N-	5-10	+,-
107	0 0	

99C → many colonies, dimorphic on EMStac s.s.
X " "Conclusions:

106 is very likely crossable

90, 95, 93, 103, 110 should be rechecked.

Parents should be verified for colicin if relevant.

99 is partially SR and gives very frequent mutants.

(FREDERIC STRAINS).

12/18/50

Indicator →

Fredric	W518	W1113	1373	1374	1377	1395	1396	1397	C6
C _K .	CA7	+	-	+	-	-	+	-	-
V	" 18	++	-	++	++	-	++	++	++
B	" 23	++	-	++	++	-	++	++	++
D	" 01	+	-	-	+	-	+	-	+
A	38	+	-	-	-	-	-	-	+
E	Y2	+	-	+	-	-	-	-	+
G	Y6	+	-	+	-	-	-	-	+
I	53	+	-	+	-	-	-	-	+
C	57	-	-	-	-	-	-	-	+
H	58	+	-	+	-	-	-	-	+
J	62	+	-	-	-	-	-	-	+
K	K235	+	-	+	-	-	+	-	+
W	1396	-	?	-	-	-	-	-	+
	W1397	-	?	-	-	-	-	-	?

+ indicates colicin *actein*; - indicates no *actein*.

Colicins provide clear differentials between W6-strains.

Colicidal *actein* of W1396 is very weak, if any.

Note. CA53 and CA62 are both mixed in respect to Mal+ and -. However each component is C_K+ in W518. CA53 is Lac+ CA62 is Lac-.

CA62 Mal- is a weak fermenter. It gives Mal+ readily. Some have a radiating appearance, but unmistakably Mal+ → - detailed.

12/23/50.

W1177*

Confusions

#5110

66

68

70

75

90

93

95

103

106

K12

109

110

111

112

113 110007

114 111171

115 110565 sp?

116 112774

117 111552

118

119

120

121

122

123

124

125 mucoid

tract

126 muctact + muc

127 muc ~~+~~ mme128 ~~+~~ mme

See Edmon's Address

X⁺ SR in EMS lacers

1 Lac+

1 Lac+

O

1 muc 2 nonmuc lac+

2 muc + ?

O, #

2 v.sur. Lac - 1 lac+

13 Lac - ; 10 Lac -

3 Lac -

ca 300 lac+, -

2 v.sur.

2 Lac+

O

8 Lac+

O

1 Lac+, O

O

ca 100 Lac+ var. ch.

ca 100 Lac+ sur. ch.

O

O O

5 Lac+

O O

2 muc 1 muc

Conclusions:

106: Mal- prototrophic. Mal-. ∴ recombinants all > - . Edm - ?

103: also gives Mal- prototrophic. lac -. ∴ 103 also interfertile

95: 1 Mal tract : prot
2 Mal-trac, not prototrophic! ??

Remarks # 70, 90, 93, 95; 116; 120, 121, 124

PRESERVATION:

1 2 3 4 5 6 7 8 9 10
 K-12 ✓ 1113 ✓ 1373 ✓ 1374 ✓ W1377 ✓ W1395 ✓ W1396 ✓ W1397 ✓ W1494 ✓ 1526A
 776. Blair-Clyfton 3-Sheepro 13 26 23 34 42 46 (CA-62) (CA-53)
 Cereum + + + + + + + + + +
 Feaces + + + + + + + + + +
 Chick.F. + + + + + + + + + +
 Nutrition + + + + + + + + + +

F:	+	-	[+]	(+)	-	AG	+?	-	-	-	-	-
Lac	+	AG	+	AG	+	AG	+	AG	+	delayed	-	-
Mal	+	+	+	+	+	+	+	+	+	+	+	+
Xyl	+	+	+	+	+	+	+	+	+	+	+	+
Sac	-	+	-	-	-	+	+	-	+	+	+	+
Gal	+	+	+	+	+	+	+	+	+	+	+	+
Mtl	+	+	+	+	+	+	+	+	+	+	+	+
Stl	+	+	+	+	+	+	+	+	+	+	+	+
Ara	+	+	+	+	+	+	+	+	+	+	+	+
Gluc	+	+	+	+	+	+	+	+	+	+	+	+
Cellob	-	-	-	-	-	-	-	-	-	-	-	-
Arabin	+	+	+	+	+	+	+	+	+	+	+	+

O R 77 17 8 8 25 25 -- - 2 - 12 R
 K H wt 41-33
 serif. R S S RS S R S S R
 Cereum pr +
 Feaces suc. all but C O S A ± SAC VBD SIADC S: VBOEFJK SA + I + I

h	++	++	++	++	+	-	-	++	+	++	++
MR	-	-	-	-	-	+	+	-	-	-	-
VP	-	-	-	-	-	-	-	-	-	-	-
Chlor	-	-	-	-	-	+	+	-	+	-	-
T1	S	R	R	R	R	R	R	R	R	R	S
2	S-P	S-P	R	R	R	R	R	R	R	R	R
3K	R	R	R	R	R	R	R	R	R	R	S
4	S	R	R	R	R	R	R	R	R	R	R
5	S	R	R	R	R	R	R	R	R	R	SR
6	S	R	R	R	R	R	R	R	R	R	R
7	S	R	R	R	R	R	R	R	R	R	R
X1	+	R	R	R	R	R	R	R	R	R	R
X2	S	R	R	R	R	R	R	R	R	R	R

Valine S R R R R R R

possibly
infected
see 967

WG	11	12	13	14	15	16	17	18	19	20
W-	1549 ✓	1550 ✓	1548 ✓	1584 ✓	1715 ✓	1716 ✓	1633 ✓	1718 ✓	1719 ✓	1720
776-	398	403	234	237	475	479	609	613	629	635
Origin	Sputum	F	BB45	(BB34)	Bokholt & 68 HB-Stray	Bokholt & 72 out	T747-gallbl. Lung	4	4	
Nutrition	+	+	+	Proline	+	+	++			
F	+	+	-	+	-	+	-	-	-	-
Lac	+	AG +	AG -	AG -	P (ag) +	+	+	+	4 -	+
Mal		+	+			+	+	+	+	+
Xyl										
Sdc	-	++	-	-		-	-	-		
Gal	+	+	+	+						
Mlt										
Stl										
Ara										
Glu										
Cello	-	-	-	-	-	-	-	+	-	
Rhamn	+	+	+	+						

Acuff.	O	15		16	-						
K	H	-									
S	S?	R	R	Ag ^b 12	Ag ^b 13	pair 1+3	-	-	H+T+I-33	7	S
Colicin P1 60m ¹⁰⁹²		x	wg2-s	R	Lysogenic	-	-	++	-	++	

Valine

	++	++	++	++	+	+	
Inhal.	++	++	++	++	+	+	
M.R.	-	-	-	(-)	-	-	
V.P.							
Citrate	-	-	-				
T1	R	R	R	R	R	R	R
T2	R	R	R	R	R	R	R
T3K	R	R	R	R	R	R	R
T4	R	R	R	R	R	R	R
T5	R	R	R	R	R	R	R
T6	R	R	R	R	R	R	R
T7	S	RSP	R	R	R	R	R
X ₂₇₀	R	R	R	R	R	R	R

✓ 3 weeks ago

WG 21 ✓ 22 ✓ 23 ✓ 24 ✓ 25 ✓ 26 ✓ 27 28 29 30
 W 1721 1722 1723 1710 1711 1712 1714 1258 1115 1762
 776- 665 657 672 1051 1056 1081 1188 Cavalli Shapiro, 1286
 NTCC 123 Clifton; Chick. F K-130
 F F u Buf. Drain Buf. Drain Buf. Drain ~~u~~ u Autotroph? Chick. F K-130
 28A = prototrophic

	Cystineless							
F	+	-	-	(-)	-	-	-	-
Lac	+	+	+	+ <u>unstab.</u>	+	+	+	+
Mal	+	+	+	-	+	+	+	+
Xyl	+	-	-	-	-	+	+	-
Sac	+	-	-	-	-	+	+	-
Zal								
Mtl								
Sac								
Ara								
Glu								
Gelo	-	-	-	+	+	-	-	-
Threon								

Acid.	S (R, A)	S	S	S	S	
O						
H	++	H ⁺	4		1	-
						27

Cls - + + + - - → 1082. * + + ^{K12} ₁₉₁₈

T1	R	R	R	R	R	R	R	R	R	R	R	R	Few Plaques
T2	R	R	R	R	R	R	R	R	R	R	R	R	R
T3K	R	R	R	R	R	R	R	R	R	R	R	S	R
T4												R	marked
T5												R	
T6												R	
T7	R	R	R	R	S	R	R	R	R	R	R	R	
λ	R	R	R	R	R	R	R	R	R	R	R	R	RP
λ2	R	R	R	R	R	R	R	R	R	R	R	S	marked

WG 36 & 38 from
same patient.

Wg	31	32	33	34	35	36	37	38	39	40	
W	1376	759	1904	1905	1906	1913	1914	1916	1398	1917	
	776	30	1552	1542	1417	Waksman	1667	1696	1666	32	436

U WPHL Catherin Benham Davis Catherin Catherin Catherin U WPHL Benham (V)

Aer

四
七

21 ✓

1

1

4 18 4
3 26 5
26 (14) 5

$$\begin{array}{r} 4(18) \\ 12 \\ + \end{array}$$

A^+

the campsite

Lysog. K12

λ_2 R mag

Wg	41	42	43	44	45	46	47	48	49	50
WD	1925	1929	1959	1985	1986	1989	1799	1997	2005	1939
776	772	1688	1562	1301	1313	1214	1398	1415	1407	1763
Bentham (F)	Catlin	Catlin	Muller Uchi. (mouse)	Bentham (F)	Bentham	Bentham	Bentham	Bentham	IVMS (second)	Colwell TR-

	-	+	EML	-	+	+
F						
Loc	+	+				
mal	+	+				
Xyl	-	+				
Suc	-	+				
Gal	-	+				
nit	-	+				
Std						
Aral						
Flu						
Cello						
Rhn	+	-				

O 97 K 3? H + 31-33 J rough 4 - 26(2) H + 77 76 ✓ 3(23) 13 ++ H + 26-30 27 81 - -

ung SD appears a mixture of stable Mn^{+} and $-\cdot$!

(cf e.g. W1939a recently received. Easily separated)

Mn^- appears stable; same for $+\cdot$!)

but does give rare + papillae (see 1004)

WG	51	52	53	54	55	56	57	58	59	60
w	2049	1888	1970	1871	1875	2665	2691			
(176-)	100c 122	293	295	296	300	1854	1890			

= "C"
Weigle Kauffmann

K. K. K. Fucus. Ewing

F	- + Butan	- + Pyru	- + var Pyru	- - Pyru	- - Pyru	- + AB	- + AB
Lac	+	+	+	+	+	+	+
Mal	+	+	+	+	+	+	+
Xyl						+	+
Sucr	-	-	-	+		-	+
Gal						+	+
Mtl						+	+
Stl						+	+
Ara						+	+
Glu						+	+
Cello						-	
Rham	+	-	+	+			

Acr	18	20	21	25	26	S
O	-			19	36	
K	-	14	17	20	-	
H	-,+ +			-	12	

ch

020 =
Fla

✓ Orskov:
mixed i
WG52
+
another

✓ Orskov:
mixed i
WG54

025
H12
= wg55?

T	1	S
2	SS	
3	S	
4	S	S±
5	S	
6	S	
7	S±	

R	R	R	R
R	R	R	R
R	R	R	R
R	R	R	R
R	R	R	R

12 S

R R

12/27/50.

Re-test: crosses on EMS lac sm. 2 plates each.

-65	V. numerous, mostly small colonies
66	0 0
68	0 0
70	0 1+
75	1+ more 1+ more
90	0 0
93	1+ 1+
95	0 0
103	1+ 0
106	1-, 1- large 4- small
110.	0, 0.

very low yields!

Purify on EMBS lac + recheck.

all Mal- : 1

65: parent culture is mixture of Mal- and Mal+. Fissions, all Mal-
Resist from slant!

70:	Lac-Xyl-	Control: Lac+ Xyl+	autotrophic
75:	2 Lac-Xyl-	" Lac+ Xyl+	
93	2 " "	" "	
103	1 " "	" "	
106	7 Lac-Xyl-	" Lac- " Xyl+	

Test for prototrophy! 106: x⁺ sR. Others did not
grow on EMBS lac SM. Repeat crosses:

106: Rather dilute plating: numerous colonies developing slowly
with lac+ appearance!
When streaked, these are fine, rather brigamy
lac-. After 48-72 hours, they develop a mottled appearance something
like the EMS colonies.

65 test:

separate Mal+ and Mal- components.

A:(Mal-) gave colonies, control as well as X1177, in EMM's Lact. sus.

B was infertile.

65 is considered not infertile.